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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/585,665	11/13/2007	Wolfgang Kramer	016906-0524	4196

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FOLEY AND LARDNER LLP
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3000 K STREET NW
WASHINGTON, DC 20007

EXAMINER

LEO, LEONARD R

ART UNIT	PAPER NUMBER
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3785

MAIL DATE	DELIVERY MODE
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10/22/2010

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/585,665	Applicant(s) KRAMER, WOLFGANG	
	Examiner Leonard R. Leo	Art Unit 3785	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 September 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,6,8 and 10-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,6,8 and 10-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 July 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>8/10</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

The amendment filed on September 1, 2010 has been entered. Claims 2-5, 7 and 9 are cancelled, and claims 1, 6, 8 and 10-15 are pending.

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the “fin ... arranged between flat tubes of the heat exchanger or perpendicular to the flat tubes of the heat exchanger” in claims 1 and 12 and “tubes are connected to the header boxes ... with an inlet and outlet” in claims 11 and 15 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will

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be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Figures 1-4 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

New corrected drawings in compliance with 37 CFR 1.121(d) are required in this application because the drawings are informal with handwritten references and specks. Applicant is advised to employ the services of a competent patent draftsman outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings. The corrected drawings are required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance.

Specification

The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

Arrangement of the Specification

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. ***Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading (emphasis added).*** If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

(a) TITLE OF THE INVENTION.

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- (b) CROSS-REFERENCE TO RELATED APPLICATIONS.
- (c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
- (d) THE NAMES OF THE PARTIES TO A JOINT RESEARCH AGREEMENT.
- (e) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC.
- (f) BACKGROUND OF THE INVENTION.
 - (1) Field of the Invention.
 - (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
- (g) BRIEF SUMMARY OF THE INVENTION.
- (h) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
- (i) DETAILED DESCRIPTION OF THE INVENTION.
- (j) CLAIM OR CLAIMS (commencing on a separate sheet).
- (k) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
- (l) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

Furthermore, the disclosure is objected to because of the following informalities: the reference to claim 1 on page 1 and the reference to claims 1 and 11 on page 2 of the specification are improper. The references to the claims should be deleted.

Appropriate correction is required.

Claim Objections

Claim 10 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

The limitation of "the incident flow[-off] angle and the flow-off angle each lies in a range of from 5 to 15 degrees" of claim 10 does not further limit the recitation of "the incident flow[-off] angle and the flow-off angle each lies in a range of from 0 to 10 degrees of claim 1.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 10 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The specification lacks an adequate written description of the invention. There is no basis for “the incident flow[-off] angle and the flow-off angle each lies in a range of from 5 to 15 degrees and the deflecting angle lies in a range of from 20 degrees to 30 degrees” in claim 10. This claim limitation corresponds to the Z-shaped profile, which does not read on claim 1 reciting “an S-shaped cross section.”

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1, 6, 8 and 10-15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

There is an inconsistency between the language in the preamble and the body of the claim, thereby making the scope of the claim unclear. Applicant is required to clarify whether the claim is intended to be drawn to the subcombination or the combination, and amend the claim to be consistent with the intent. For example, claims 1 and 12 appear to recite a fin, i.e.

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subcombination, whereas claims 11 and 15 appear to recite a heat exchanger with a fin, i.e. combination.

A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. See MPEP § 2173.05(c). Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, claim 1 recites the broad recitation "buckle-proof profile" in line 7 and "molded stiffening elements" in line 9, and the claim also recites "the profile includes an S-shaped cross section with two rounded portions" in lines 11-12 which is the narrower statement of the range/limitation. Similar occurrences are present in claim 12.

Regarding claim 1, the recitations of "an incident flow-angle," "a flow-off angle," and "a deflecting angle" in lines 15-16 are indefinite. The claim requires structure or perspective reference to define how the angles are determined, i.e. straight lines, central plane, etc. Further, claim 1 recites the limitation "the incident flow-*off* angle" in line 18. There is insufficient antecedent basis for this limitation in the claim.

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Claim 8 recites the limitation "the incident flow-*off* angle" in lines 1-2. There is insufficient antecedent basis for this limitation in the claim.

Claim 10 recites the limitation "the incident flow-*off* angle" in lines 1-2. There is insufficient antecedent basis for this limitation in the claim.

Regarding claim 12, similar to claim 1, the recitations of "an incident flow-angle," "a flow-off angle," and "a deflecting angle" in lines 11-12 are indefinite. The claim requires structure or perspective reference to define how the angles are determined, i.e. straight lines, central plane, etc. Further, claim 12 recites the limitation "the incident flow-*off* angle" in line 13. There is insufficient antecedent basis for this limitation in the claim.

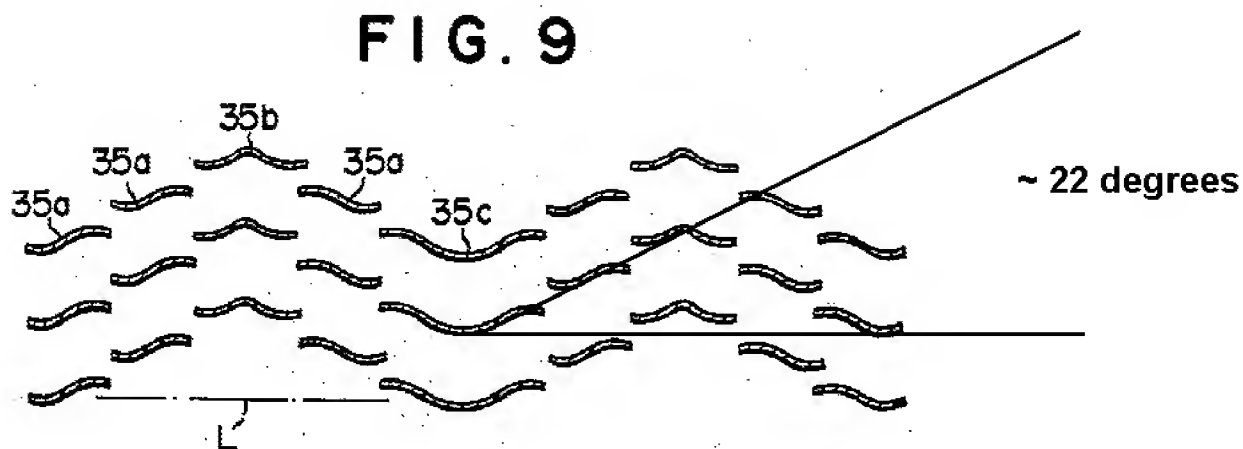
Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 6, 8 and 10-15 as best understood are rejected under 35 U.S.C. 103(a) as being unpatentable over Hatada et al in view of Kadle.

Hatada et al (Figure 10) discloses a fin comprising gills 45 having a S-shaped cross section with an incident-flow angle approximately the same size as a flow-off angle of zero degrees and a deflecting angle of about 22 degrees (as permissibly gleaned from the drawings below), but does not disclose flat tubes.



Kadle discloses a heat exchanger comprising header boxes 12, 14, tubes and fins 30 with gills 36, wherein the tubes may be round 46 (Figures 5-7) or flat 26 (Figures 1-2) for the purpose of a desired heat exchange.

Since Hatada et al and Kadle are both from the same field of endeavor and/or analogous art, the purpose disclosed by Kadle would have been recognized in the pertinent art of Hatada et al.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to employ in Hatada et al flat tubes for the purpose of a desired heat exchange as recognized by Kadle. Furthermore, it would have been obvious to one of ordinary skill in the art to simply substitute one known element for another to obtain predictable results.

KSR Int'l Co. v. Teleflex Inc., 82 USPQ2d 1385, 1395 (2007)

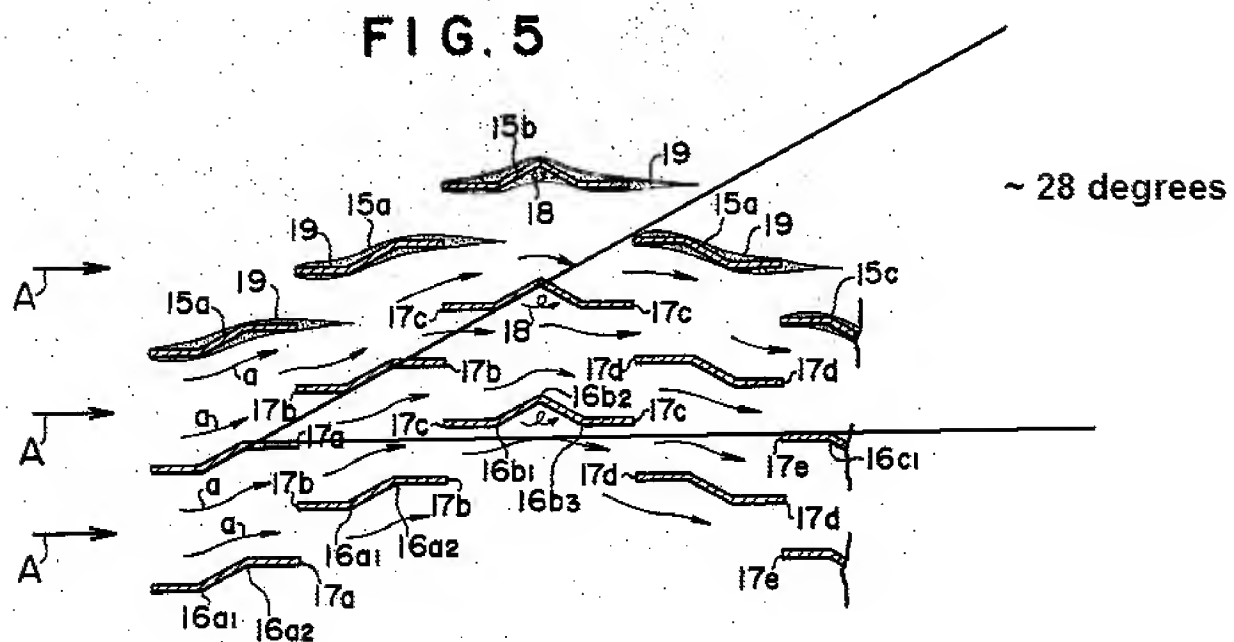
Alternatively, regarding claims 1, 8 and 12, it would have been obvious to one having ordinary skill in the art at the time the invention was made to employ any deflection and/or flow angle, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

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As recognized by the prior art, the angle affects the flow characteristics, which directly relate to pressure drop and heat transfer. As disclosed by Hatada et al the deflecting angles are employed to remove/reduce the boundary layer to affect heat transfer. Given this fundamental principle, one of ordinary skill in the art would employ any deflecting angle to achieve optimal performance.

Regarding claims 11 and 15, Figure 1 of Kadle discloses header boxes 12, 14.

Regarding claims 12-14, Figure 5 of Hatada et al discloses gills 15a, 15c having an approximately Z-shaped cross section with an incident-flow angle approximately the same size as a flow-off angle of zero degrees and a deflecting angle of about 28 degrees (as permissibly gleaned from the drawings below).



Response to Arguments

The objection to the drawings under 37 CFR 1.83(a) is withdrawn in view of the cancellation of claim 5.

The rejection under 35 U.S.C. 112, first paragraph, is withdrawn in view of the cancellation of claim 5.

The anticipatory rejection in view of Urushibara and Maruo are withdrawn in view of the claim amendments.

Applicant's arguments have been fully considered but they are not persuasive.

The primary reference of Hatada et al discloses in Figures 5 and 9 the respective embodiments of the instant invention, including the claimed angles. Alternatively, as noted in the previous and instant Office action, the deflecting angle is a result effective variable which one of ordinary skill in the art would recognize.

Conclusion

Applicants' amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

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however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leonard R. Leo whose telephone number is (571) 272-4916. The examiner can normally be reached on Monday thru Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Judy Swann can be reached on (571) 272-7075. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/ Leonard R. Leo /
PRIMARY EXAMINER
ART UNIT 3744

October 21, 2010